

DECswitch 900EF Router

Installation and Configuration

Order Number: EK-DEFBA-DN. A01

July 1995

This manual describes how to install and configure the DECswitch 900EF Router.

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July 1995

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Attention!

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

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Preface

Overview

About this Manual

This manual describes how to install the DECswitch 900EF Router in a DEChub 900 MultiSwitch. This manual also describes how to configure the DECswitch 900EF Router software to operate in either a DEChub 900 MultiSwitch or as a standalone module in a DEChub ONE docking station.

Intended Audience

This manual is intended for use by personnel who will install and configure the DECswitch 900EF Router.

Organization

This manual is organized as follows:

Section	Description
1	Provides an overview of the DECswitch 900EF Router, describes its features, and lists front and back panel features.
2	Provides instructions for installing the module in a DEChub 900 MultiSwitch.
3	Provides instructions for installing the setup port cable.
4	Provides instructions for configuring the module in a DEChub ONE.
5	Provides instructions for configuring the module in a DEChub 900 MultiSwitch.
6	Provides instructions for removing the module from a DEChub 900 MultiSwitch
A	Provides installation-specific troubleshooting information using the LEDs.
B	Provides connector and pin assignment information.
C	Provides product specifications.

Associated Documents

The following documents provide information relating to the module. To order any of the following documents, refer to the directions on page xiii.

Title and Order Number	Description
<i>Bridging Configuration Guide</i> AA-QL29A-TE	Describes bridging methods, operational features of bridging, configuration methods and basic configurations, and monitoring of bridging software.
<i>DEChub 900 MultiSwitch Owner's Manual</i> EK-DH2MS-OM	Provides installation, use, security, and troubleshooting information for the DEChub 900.
<i>Event Logging System Messages Guide</i> AA-QL2AA-TE	Describes messages logged by the Event Logging System.
<i>Network Interface Operations Guide</i> AA-QL2BA-TE	Describes the configuring and monitoring of the network interfaces in the Bridge Router Software bridging router.
<i>Bridge Router Software Router Protocols Reference Guide</i> AA-QL2CA-TE	Provides detailed reference information about the micro-operating system structure and the protocols and interfaces that the bridging routers support.
<i>Bridge Router Software Routing Protocols Users Guide</i> AA-QL2DA-TE	Explains how to configure and monitor the routing protocol software.
<i>Bridge Router Software System Software Guide</i> AA-QL2EA-TE	Describes the installation, configuration, and operation of the Bridge Router Software.
<i>HUBwatch Installation and Configuration</i> AA-Q358D-TE	Provides information for installing and configuring HUBwatch for Open VMS and HUBwatch for Windows.

Associated Documents (Cont.)

Title and Order Number	Description
<i>HUBwatch Use</i> AA-PW4BE-TE	Describes how to use the HUBwatch network management software. Provides information for installing and configuring HUBwatch for Open VMS and or DEC OSF/1 (Digital UNIX) operating system environment.
<i>HUBwatch for Windows Use</i> AA-Q3S3C-TE	Describes how to use the HUBwatch network management software in an MS-Windows operating environment.
<i>DEChub ONE Installation</i> EK-DEHU2-IN	Provides installation and operation guidelines for single-slot hub configuration, including rack-mount options and cabling

Documentation Comments

If you have any comments or suggestions to improve the quality and usability of this book or any of the DECswitch documents, please send them to the Network Information Products Group.

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Safety

Overview

Any warning or caution that appears in this manual is defined as follows:

WARNING	Contains information to prevent personal injury.
CAUTION	Contains information to prevent damage to equipment.
VORSICHT	Enthält Informationen, die beachtet werden müssen, um den Benutzer vor Schaden zu bewahren.
ACHTUNG	Enthält Informationen, die beachtet werden müssen, um die Geräte vor Schaden zu bewahren.
DANGER	Signale les informations destinées à prévenir les accidents corporels.
ATTENTION	Signale les informations destinées à prévenir la détérioration du matériel.
AVISO	Contiene información para evitar daños personales.
PRECAUCIÓN	Contiene información para evitar daños al equipo.

The cautions that must be observed for the hardware described in this manual are listed below in English, German, French, and Spanish.

WARNING	To prevent personal injury or equipment damage, do not insert telecommunications cabling into the Optical Bypass Relay connector.
VORSICHT	Um Personen oder Geräteschäden zu vermeiden, dürfen Sie das Telefonkabel Auf Keinen Fall am Anschluß des optischen Bypass-Relais anschließen.
DANGER	Pour éviter tout risque d'accident corporel ou de dommage matériel, Ne Branchez Pas de câble de télécommunication sur le connecteur de relais sélectif optique.
AVISO	Para evitar daños personales o al equipo, No se debe introducir cableado de telecomunicaciones en el conector óptico de relés de derivación.

WARNING

Some fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume the cable is connected to a light source.

VORSICHT

Bestimmte Lichtleitergeräte können für die Augen gefährliches Laser- oder Infrarotlicht abstrahlen. Vermeiden Sie es daher unter allen Umständen, direkt in ein Lichtleiterkabel oder einen Lichtleiteranschluß zu schauen. Gehen Sie immer davon aus, daß Lichtleiterkabel mit einer Lichtquelle verbunden sind.

DANGER

Certains équipements à fibre optique peuvent émettre un rayonnement laser ou infra-rouge pouvant provoquer des troubles oculaires. Ne regardez jamais à l'intérieur d'une fibre optique ou d'un port de connecteur. Considérez que le câble est connecté en permanence à une source lumineuse.

AVISO

Ciertos equipos de fibras ópticas pueden emitir luz láserica o infrarroja con riesgos de lesiones en los ojos. No se debe nunca mirar en una fibra óptica o una puerta de conexión. Siempre hay que suponer que el cable está conectado a una fuente luminosa.

CAUTION	This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.
ACHTUNG	Bei diesem Vorgang werden alle Konfigurationseinstellungen gelöscht und die Werkseinstellungen wieder eingesetzt. Alle Konfigurationsdaten gehen verloren.
ATTENTION	Cette action supprime tous les paramètres de configuration et les remplace par des valeurs prédéfinies. Tous les paramètres de configuration seront perdus.
PRECAUCIÓN	Esta intervención borrará todos los parámetros de configuración y los sustituirá por valores por defecto definidos de fábrica. Se perderán todos los parámetros de configuración.

Chapter 1

Product Introduction

Overview

Introduction

This chapter describes the DECswitch 900EF Router product and its features.

In this chapter

Topic	Page
What is the DECswitch 900EF Router?	1-2
Features	1-3
Front Panel Features	1-8
Back Panel Features	1-10

What is the DECswitch 900EF Router?

What is the DECswitch 900EF Router?

The DECswitch 900EF Router (also referred to in this manual as the module) provides multiprotocol routing and switching. This module interconnects networks that have both routable and nonroutable protocols. It routes some protocols while switching others. The DECswitch 900EF Router is available in two packages: Multiprotocol (MP) and Internet Protocol (IP).

The Multiprotocol package includes bridging and supports IP, IPX, AppleTalk Phases I & II, DECnet Phase IV, and DECnet Phase V/OSI protocols. The IP package supports IP routing with bridging.

The module can be configured in the DEChub 900 MultiSwitch (also referred to in this manual as the DEChub 900) or as a standalone unit into a DEChub ONE docking station (see the *DEChub ONE Installation* manual).

The DECswitch 900EF Router provides the interconnection between six 10 Mb/s Ethernet LANs and a high-speed 100 Mb/s Fiber Distributed Data Interface (FDDI) network backbone.

Ethernet is Digital's term for its product compatibility with the ISO 8802-3/ANSI/IEEE 802.3 standards and the Ethernet standards for Carrier Sense Multiple Access with Collision Detection (CSMA/CD) local area networks (LANs).

The DECswitch 900EF Router standards-compliant technology (IEEE 802.1d, 802.1h, 802.1i, 802.2, 802.3, and ANSI FDDI) ensures interoperability in multivendor networks.

Features

Your DECswitch 900EF Router module includes the following features.

Hot Swap

The module's hot swap capability allows you to install or remove the module from a DEChub 900 without turning off the power.

Configuration and Management

The following configuration and management options are available:

- Support for configuration and management through a command line interface in two ways: locally via the setup port in a DEChub ONE docking station or remotely via Telnet in both the DEChub 900 and the DEChub ONE docking station.
- Upgradeable device firmware (in nonvolatile Flash memory) using Trivial File Transfer Protocol (TFTP).
- Out-of-Band Management (OBM) over Serial Line Internet Protocol (SLIP) through the OBM connector as an alternative to in-band management.
- Support using LAN hopping and launching of Telnet windows via Digital's HUBwatch product.
- SNMP Gets and Traps for monitoring.
- When the module is installed in a DEChub ONE docking station it can be configured to access port 4 through the UTP connector on the front of the module or through the DEChub ONE's AUI port.

Features

Routing Protocols

The following routing protocols are supported:

- IP. The IP routing protocols are as follows:
 - OSPF (Open Shortest Path First)
 - RIP (Routing Information Protocol)
 - EGP (Exterior Gateway Protocol)
 - IS-IS (Integrated Intermediate System to Intermediate System)
 - MOSPF (Multicast Open Shortest Path First)
 - DVMRP (Distance Vector Multicast Routing Protocol)
- IPX
- AppleTalk Phases I & II
- DECnet Phase IV
- DECnet Phase V/OSI

Bridging

The following bridging options are supported:

- Spanning tree loop detection protocol IEEE 802.1d.
- Ability to enable or disable spanning tree algorithm on individual switch ports on a per-port basis.
- High-speed local traffic filtering and forwarding.
- Flexible filtering (source address, destination address, and protocol) for greater network control, increased security and bandwidth utilization, and reduced propagation of network problems.
- Option to turn off automatic learning and manually load the address database.

Features

FDDI/Ethernet

FDDI and Ethernet support is as follows:

- One FDDI dual attachment station (DAS) port and six 802.3/Ethernet LAN ports.
- Translation between FDDI and IEEE 802.3/Ethernet frame formats for direct, transparent connections; translation of AppleTalk®1 and AppleTalk 2 AARP packets; handling of raw IEEE 802.3 Novell® IPX packets.
- Console support for enabling and disabling translation of IPX raw 802.3 packets into SNAP encapsulated packets on the FDDI.
- Ability to switch FDDI port A to emulate a concentrator port M. If this is done, FDDI port B is automatically switched to emulate an S port.
- Each of the ports (including FDDI PHY ports 1A/M and 1B/S) is individually switchable to a DEChub 900 backplane LAN through HUBwatch management. Port 3 can be redirected to the DEChub 900 backplane ThinWire LAN segment via HUBwatch.

SNMP

Built-in SNMP agent support for the following RFCs is provided:

- SNMP management (RFC-1157)
- Management Information Base - MIB II (RFC-1213)
- Bridge MIB (RFC-1493)
- FDDI MIB (RFC-1512)
- Ethernet MIB (RFC-1398)

Manageability using any generic SNMP management application that supports the MIBs listed above.





SNMP support for Gets and for the following standard Traps, along with many proprietary traps:

- coldStart
- linkUp
- linkDown

Front Panel Features

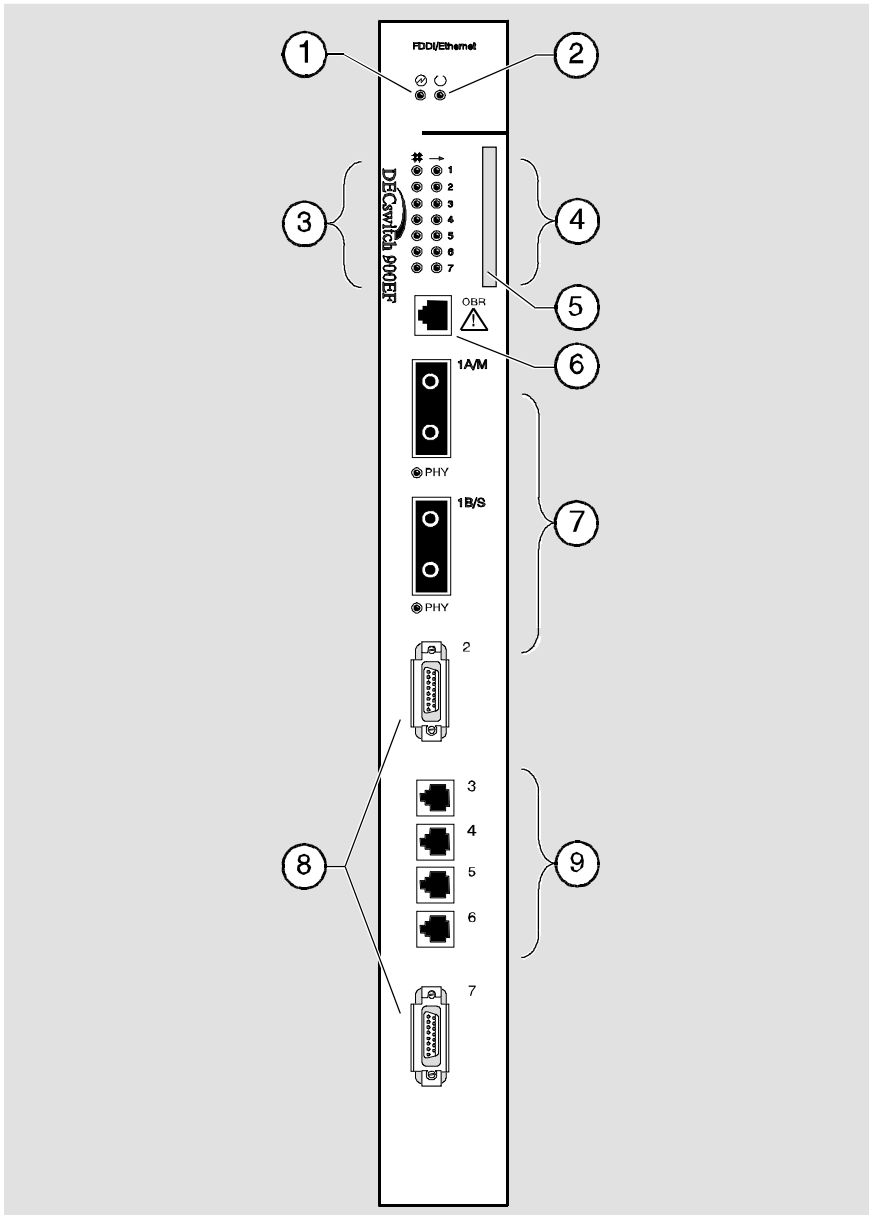
The LED indicators and connectors on the front panel (Figure 1-1) of the DECswitch 900EF Router are described in Table 1-1.

Table 1-1 Front Panel Feature Descriptions

Item	Name	Description
1	Power LED 	Indicates the module has power.
2	Module OK LED 	Indicates the module passed self-test. Off = failed self-test. Blinking = non-fatal failure.
3	Port State LED 	Indicates network traffic level on Port 0. Green = enabled and running. Blinking Green = management disabled a port. Off = failed maintenance test.
4	Network Activity LED 	Indicates network traffic level through the front panel (green) or the backplane or docking station (yellow).
5	Address Label	Contains the lowest of seven consecutive MAC addresses, that corresponds to port 1. For example, if Port 1 = 08-00-2B-AB-0C-08, then the consecutive port MAC addresses are: Port 2 = 08-00-2B-AB-0C-09 Port 5 = 08-00-2B-AB-0C-0C Port 3 = 08-00-2B-AB-0C-0A Port 6 = 08-00-2B-AB-0C-0D Port 4 = 08-00-2B-AB-0C-0B Port 7 = 08-00-2B-AB-0C-0E
6	OBR (6-pin MJ) connector	Allows you to connect an Optical Bypass Relay (OBR) device (not supplied) to maintain connectivity of the FDDI ring in the absence of power or during fault conditions in a station.
WARNING		
To prevent personal injury or equipment damage, do not insert telecommunications cables into the Optical Bypass Relay connector.		
7	DAS FDDI port connectors and their PHY LEDs	Indicates one Dual Attachment Station (DAS) port is labeled 1A/M and the other port is labeled 1B/S. Both ports are standard FDDI MIC connectors.
8	802.3/Ethernet AUI (15-pin D-Sub)	Refer to the <i>OPEN DECconnect Applications Guide</i> for a list of AUI media adapters you can use with your module.
9	10BaseT (8-pin MJ)	Wired as straight-through connectors; support UTP and STP cabling.

Front Panel Features

Figure 1-1 Front Panel LEDs and Connectors



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Back Panel Features

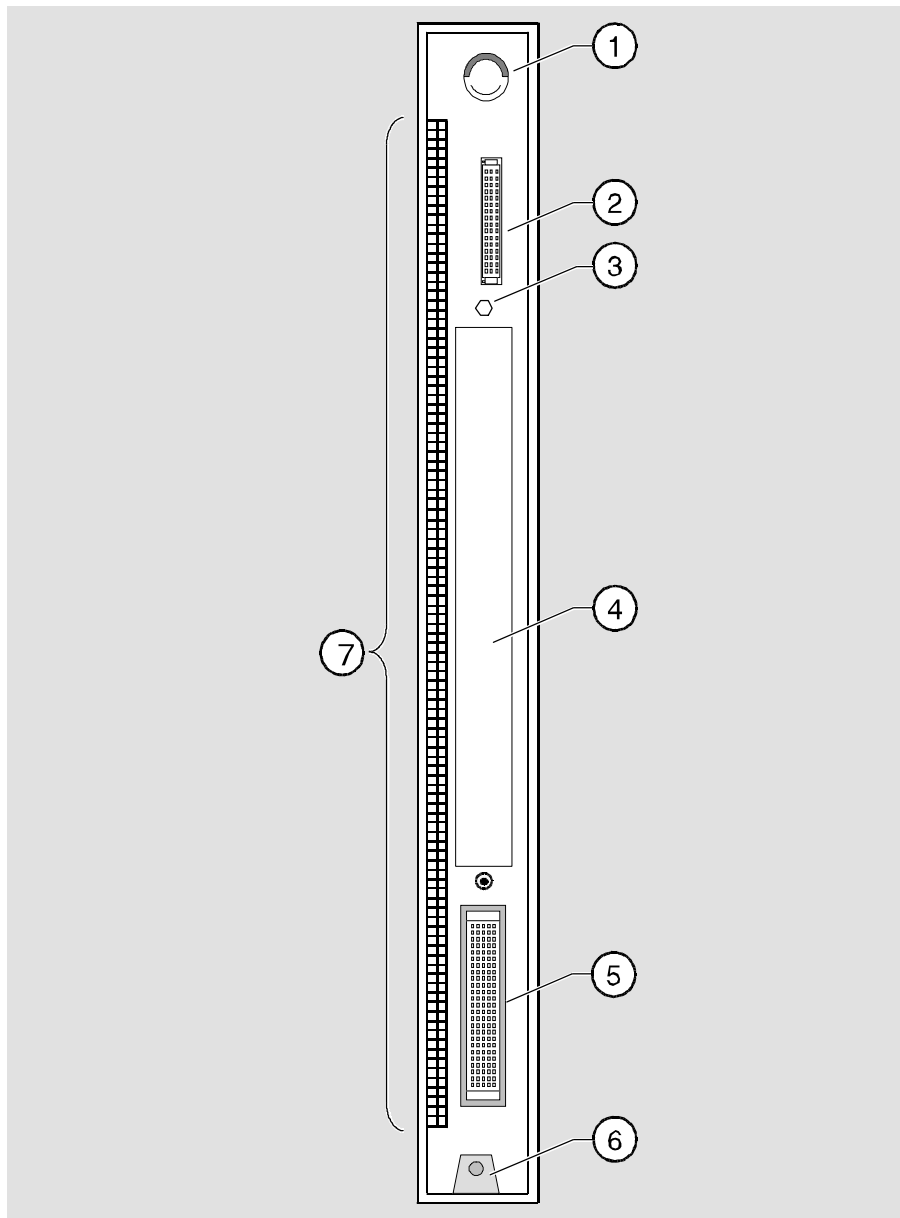
The features on the back panel (Figure 1-2) of the DECswitch 900EF Router are listed in Table 1-2.

Table 1-2 Back Panel Feature Descriptions

Item	Name	Description
1	Locking tab	Locks the module into the DEChub 900 and engages the power switch.
2	48-pin connector	Provides network and power connections to the module when the module is installed in a DEChub 900 or DEChub ONE.
3	Grounding bolt	Provides a chassis ground connection between the module and the DEChub 900 or the DEChub ONE.
4	Manufacturing label	Lists the module's part number, serial number, revision level, and power requirements.
5	160-pin connector	Provides network and power connections to the module when the module is installed into a DEChub 900 or a DEChub ONE docking station.
6	Mounting tab	Secures the module when it is installed into a DEChub 900 or a DEChub ONE docking station.
7	Grounding fingers	Provide additional chassis grounding between the module and a DEChub 900 or a DEChub ONE docking station.

Back Panel Features

Figure 1-2 Back Panel Layout



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Chapter 2

Installing the Module

Overview

Introduction

This chapter describes how to install the DECswitch 900EF Router in a DEChub 900 MultiSwitch. To install a module in a DEChub ONE docking station refer to the *DEChub ONE Installation* manual.

In this chapter

Topic	Page
Installing the Module in a DEChub 900	2-2
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Task 2: Seat the Module into the DEChub 900	2-4
Task 3: Verify Initial LED Operation	2-6
Task 4: Connect the Cables	2-7

Installing the Module in a DEChub 900

The DECswitch 900EF Router hot-swap feature allows you to install the module into the DEChub 900 without turning off power. Seating the module initiates the module's powerup sequence if enough power is available.

Installing the module in a DEChub 900 involves the following tasks:

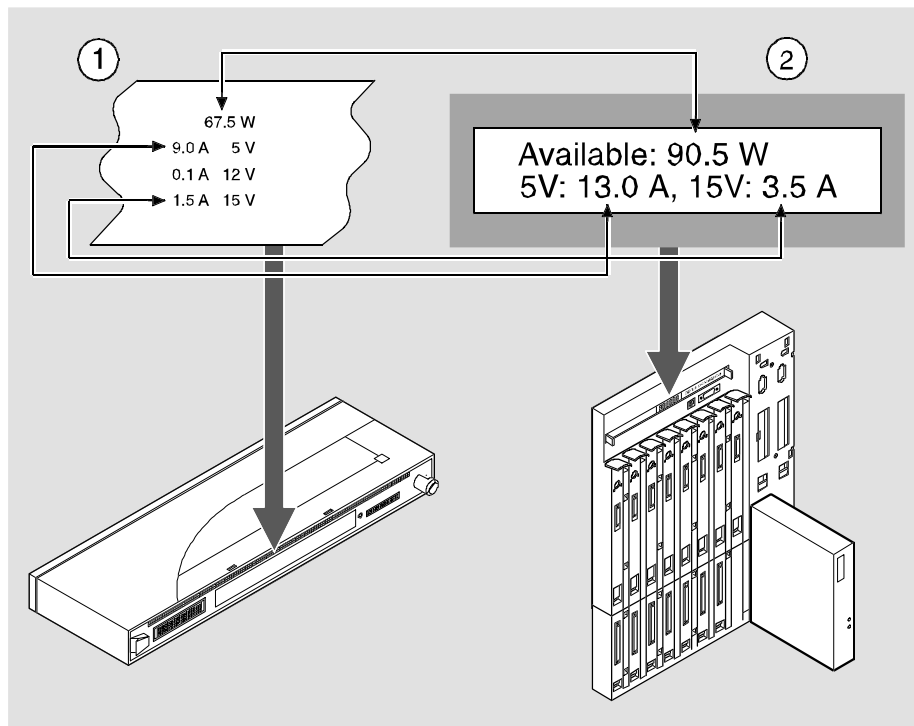
Task	Description
1	Compare the power ratings.
2	Seat the module into the DEChub 900.
3	Verify initial LED operation.
4	Connect the cables.

Task 1: Compare the Power Ratings

Compare the module's power ratings (1) with the values shown in the Hub Manager Status display (2) (see Figure 2-1). If the power values on the module's manufacturing label do not exceed the values shown in the Hub Manager status display, go to Task 2.

If the power values on the module's manufacturing label exceed the values shown in the Hub Manager status display, add another power supply to the DEChub 900 (refer to the *DEChub 900 MultiSwitch Owner's Manual*). The 12V power in the DEChub 900 is derived from the 15V source. Although it is listed separately in the product specifications, the 12V requirements are included in the 15V power total.

Figure 2-1 Module Power Ratings



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Task 2: Seat the Module into the DEChub 900

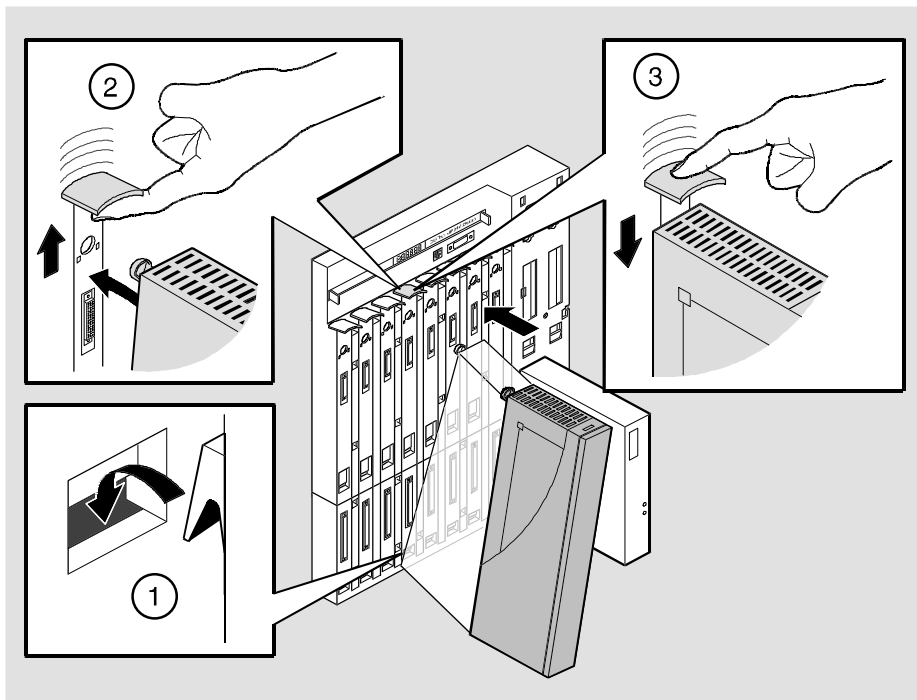
Task 2: Seat the Module into the DEChub 900

To seat the module, perform the following steps (refer to Figure 2-2).

Step	Action
1	Place the module's mounting tab into a mounting slot (1) on the DEChub 900.
2	Pull up the release lever (2) to its unlocked position.
3	Pivot the module on the mounting slot and align the connectors.
4	Firmly push the module onto the backplane connectors.
5	Press down on the release lever (3) to ensure that the module is locked.

Task 2: Seat the Module into the DEChub 900

Figure 2-2 Seating the Module






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Task 3: Verify Initial LED Operation

Task 3: Verify Initial LED Operation

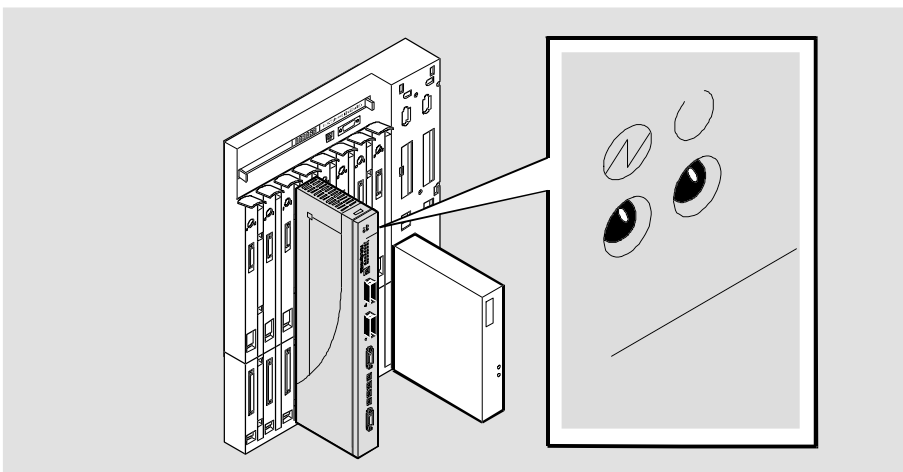
Verify that the module's Power LED and the Module OK LED light within 1 minute (See Figure 2-3). The LEDs light in the following two occurrences:

Occurance	Description
1	The Power  LED lights when power is applied to the DEChub 900, then the module performs a self-test.
2	After the module completes self-test, the Module OK  LED lights and remains lit. Then the Hub Manager status display shows: 

Note

Refer to Appendix A, Problem Solving if the LEDs do not operate as described.

Figure 2-3 LED Location



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Task 4: Connect the Cables

Depending on your network configuration requirements, connect the appropriate FDDI cables, AUI cables and UTP/STP cables.

See your network manager if you are not sure which cables to connect.

Note

All cables should be installed, tested, and tagged at the site, prior to this installation.

To	Go to
Connect FDDI cables	Page 2-8
Connect AUI cables	Page 2-9
Connect UTP/STP cables	Page 2-10
Connect Optical Bypass Relay (OBR)	The installation instructions included with the OBR

After all cables are installed, go to Chapter 5, Configuring the Module in a DEChub 900.

Task 4 (Cont.): Connect the FDDI Cable

Task 4 (Cont.): Connect the FDDI Cable

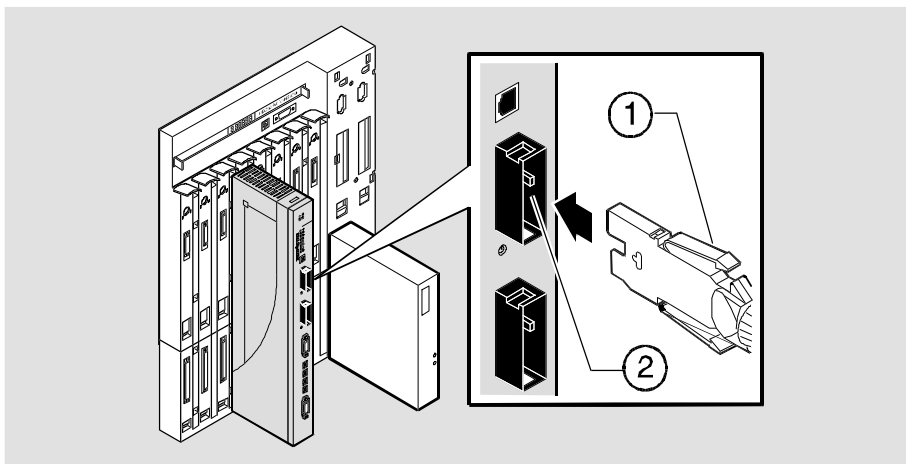
To connect the FDDI cable, complete the following steps (see Figure 2-4).

Step	Action
1	Remove the protective caps from the module's FDDI connector and from the FDDI cable plug.
2	Align the keyway on the FDDI cable plug with the key on the module's FDDI connector.
3	Insert the plug into the connector (2), ensuring that the locking clips (1) on the sides of the plug snap into the locked position.

Note

To disconnect the cables, press the locking clips on the cable plug (1), then pull out the connector.

Figure 2-4 FDDI Cable Connection



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Task 4 (Cont.): Connect the AUI Cable

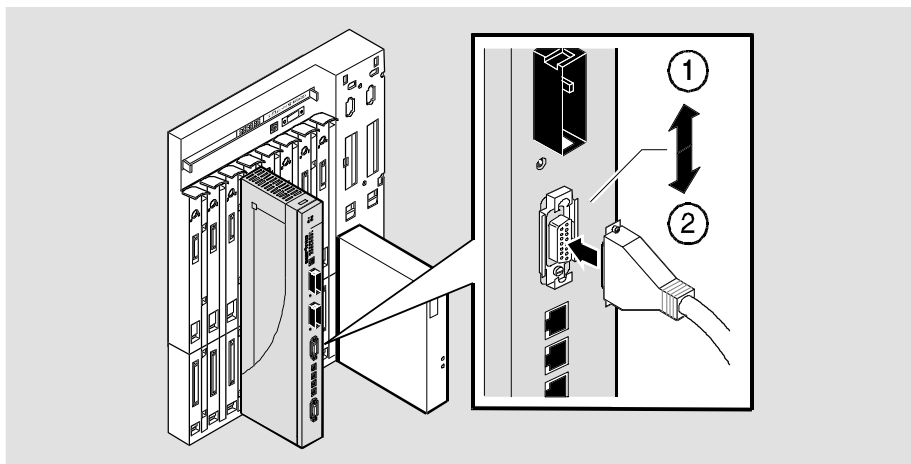
To connect the AUI cable, complete the following steps (see Figure 2-5).

Step	Action
1	Push the module's AUI connector slide latch up (1) to the unlocked position.
2	Insert the AUI cable plug into the AUI connector.
3	Push the module's AUI connector slide latch down (2) to the locked position.

Note

To disconnect the cables, push the connector slide latch to the unlocked position (1), then pull out the connector.

Figure 2-5 AUI Cable Connection



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Task 4 (Cont.): Connecting the UTP/STP Cable

The DECswitch 900EF Router module uses straight-through 10BaseT 8-pin MJJ port connectors. Select the appropriate UTP/STP cable type (crossover or straight-through) to ensure that the module's transmit/receive signals connect correctly to the transmitter/receiver of the connected device.

Before connecting the cables to the module, note the following rules:

If the device you are connecting to the module uses	Then use
Straight-through connectors	Crossover cables
Crossover connectors	Straight-through cables

Notes

1. The sum of crossovers must always equal an odd number.
 2. Digital's straight-through cables are marked (=); crossover connectors (and cables) are marked (X).
-

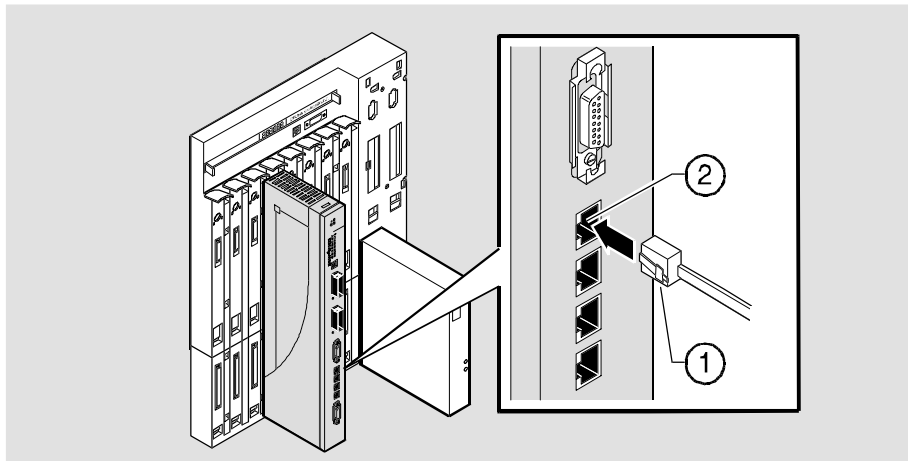
If you need help determining the appropriate cable type to use, refer to Appendix B, Connector and Pin Assignments.

Task 4 (Cont.): Connecting the UTP/STP Cable

To connect the UTP/STP cables, complete the following steps (see Figure 2-6).

Step	Action
1	Align the release tab on the cable plug (1) with the keyway on the module's 10BaseT port connector.
2	Insert the plug into the connector (2), ensuring that the release tab snaps into the locked position.

Figure 2-6 UTP/STP Cable Connection



NPG-0112-95F

After module cables are installed, go to Chapter 3, Installing the Setup Port Cable.

Chapter 3

Installing the Setup Port Cable

Overview

Introduction

This chapter describes how to connect the DECswitch 900EF Router module to the setup port on a DEChub 900 MultiSwitch or a DEChub ONE docking station.

In this chapter

Topic	Page
Signaling Standards	3-2
Setup Port Device Cabling	3-3
Connecting the Setup Port	3-4

Signaling Standards

Signals from the DEChub 900 Hub setup port and from the DEChub ONE docking station setup port conform to the EIA-232D signaling standard at 9600 baud. To the user, the port appears as a data terminal equipment (DTE) device.

The DEChub 900 Hub Manager setup port is compatible with devices that use the EIA-423 signaling standard.

Setup Port Device Cabling

The setup port (see Figure 3-1) on the DEChub 900 MultiSwitch or the DEChub ONE docking station can be connected to a setup port device (a terminal or personal computer), using the following cables and adapters:

If the setup port device is	Use this cable	With this adapter
PC with a 9-pin D-Sub communications port	BN24H-xx ¹	H8571-J
Terminal with a 25-pin D-Sub connector	BN24H-xx ¹	H8575-A
Terminal with a 6-pin MMJ connector	BN24H-xx ¹	Not required.

¹ xx indicates cable length in meters.

Connecting the Setup Port

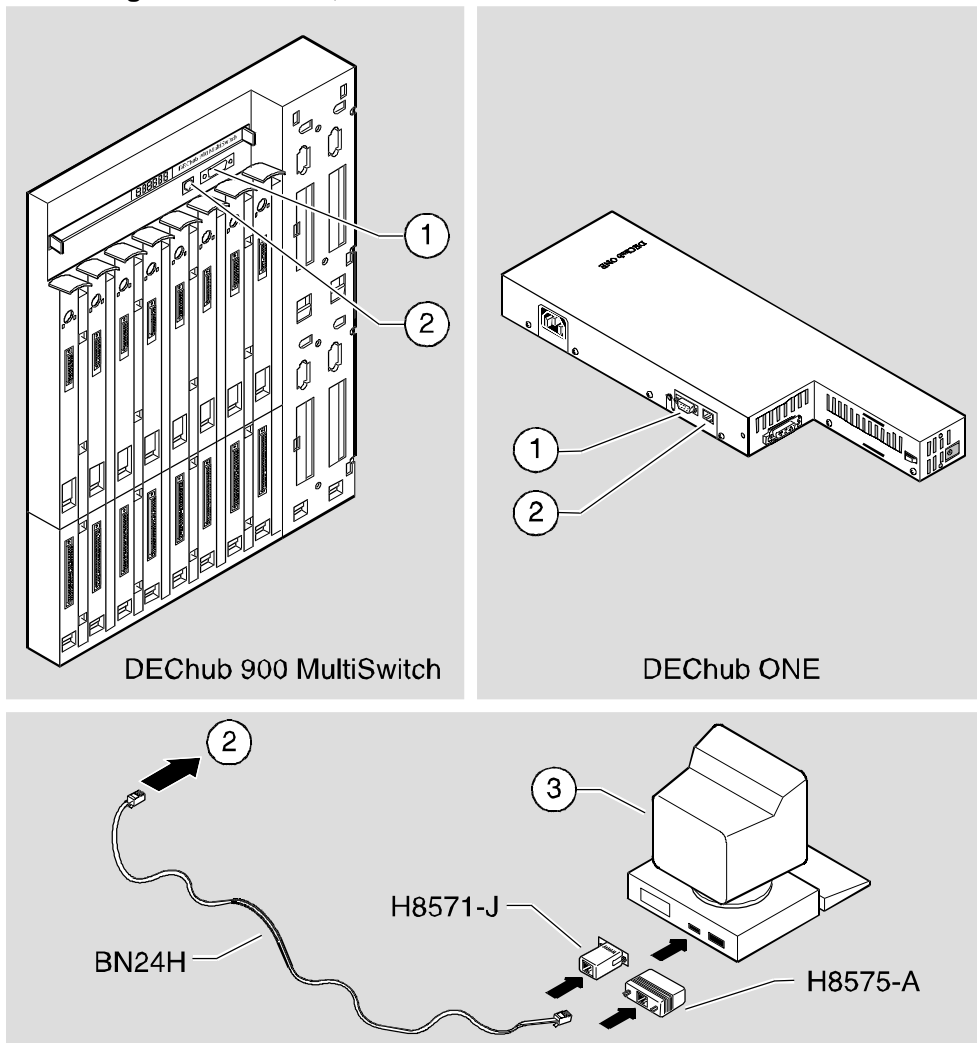
To connect the setup port on the DECswitch 900EF module, complete the following steps:

Step	Action
1	Ensure that the transmit and receive baud rates on the setup port device are set to 9600 baud.
2	Connect the setup port device to the setup port connector on either the DEChub 900 or the DEChub ONE docking station (see Figure 3-1).

The following legend identifies the setup port cabling.

Item	Description
1	OBM Port
2	Setup Port
3	Setup Port Device

Figure 3-1 Device, Cable and Connector Identification



NPG-0233-951

After all cables are connected, go to one of the following sections.

To	Go to
Configure the Router in a DEChub ONE	Chapter 4
Configure the Router in a DEChub 900	Chapter 5

Chapter 4

Setting Up and Configuring the Module in a DEChub ONE

Overview

Introduction

This chapter describes how to setup and configure your DECswitch 900EF Router when it is installed in a standalone unit DEChub ONE docking station. For DEChub ONE installation procedures refer to the *DEChub ONE Installation* manual.

In this chapter

Topic	Page
Accessing the Setup Port	4-2
Using Menus to Setup the Module	4-3
Go to Local Console	4-16

Accessing the Setup Port

The basic steps you must follow to configure your module and make it remotely accessible are to assign:

- An IP address
- A subnet mask
- A default gateway

The setup port provides menus that allow you to access the DECswitch 900EF Router. This setup menu allows you to minimally setup the module for basic connectivity. After setup, you then configure the module software using commands. These commands can be accessed remotely via TCP/IP Telnet, or accessed locally through the setup port on a DEChub ONE docking station.

Examples of the setup screen displays are provided in this section to aid in the description of the setup port and to display the options that are available. Because they are examples only, the displays can vary slightly from the actual screen displays on your setup port device. Boldface type in the screen display examples indicates user input.

To access the setup menus, press the Return key on the setup port device until the **DECswitch 900EF/MP INSTALLATION MENU** appears.

To configure the module using	Go to the section titled
Menus	Using Menus to Setup the Module
Commands	Go to Local Console

Using Menus to Setup the Module

This section describes the options that are available from the DECswitch 900EF/MP INSTALLATION MENU when the module is installed in the DEChub ONE docking station

The following example shows the dialog associated with this option when the module is setup with factory defaults.

```
DECswitch900EF/MP
=====
DECswitch 900EF/MP INSTALLATION MENU

[1] Restart with Factory Defaults
[2] Restart with Current Settings
[3] Show Current Settings
[4] IP Configuration
[5] Out-of-Band Port Configuration
[6] Go to Local Console

=====
Enter selection number:  n <Return>
Press Return for Main Menu ...
```

Note

The /MP that appears in menus will be replaced with /IP when using the Internet Protocol package.

Using Menus to Setup the Module

If the module was previously configured, the following example shows the dialog associated with this option.

```
DECswitch900EF/MP
=====
          DECswitch 900EF/MP INSTALLATION MENU
* * * * *
*   To fully manage this router telnet to one of its IP   *
*   addresses or select item [3] below.                   *
* * * * *

          [1] Restart with Factory Defaults
          [2] Restart with Current Settings
          [3] Go to Local Console

=====
Enter selection number:  n <Return>
Press Return for Main Menu ...
```

The following pages describe the installation menu options.

Option	Page
Restart with Factory Defaults	4-5
Restart with Current Settings	4-6
Show Current Settings	4-7
IP Configuration	4-8
Out-of-Band Port Configuration	4-13
Go to Local Console	4-16

[1] Restart with Factory Defaults

This option initializes the router configuration to factory default values by resetting the module's nonvolatile configuration storage parameters and then restarting the module. (To keep the configured setup, use Option 2, or use TFTP to save router configurations on remote host.) Allow approximately one minute for the module to restart and complete self-test.

CAUTION

This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.

The following example shows the dialog associated with this option.

```
Enter selection : 1
DECswitch900EF/MP
=====
                        RESTART WITH FACTORY DEFAULTS
* * * * *
*      IMPORTANT!   IMPORTANT!   IMPORTANT!      *
* * * * *
* This selection will delete the current configuration *
* settings and restart the system with the factory default*
* settings. All configuration settings will be lost.    *
* * * * *
=====
                        Press Y to confirm [N]: <Return>
                        Press Return for Main Menu ...
```

If you selected Y, then the following additional information appears:

```
About to Initialize CONFIG memory
Configuration memory initialized
System Restart ...
```

Then the DECswitch 900EF/MP INSTALLATION MENU menu appears.

[2] Restart with Current Settings

This option restarts the module but leaves the module's configured nonvolatile configuration storage parameters at their current values.

NOTE

Allow approximately 1 minute for the module to restart.

The following example shows the dialog associated with this option.

```
Enter selection: 2
DECswitch900EF/MP
=====
          RESTART WITH CURRENT SETTINGS
This selection will restart your system with the current
configuration settings.
=====
          Press Y to confirm [N] : <Return>
          Press Return for Main Menu ...
```

Using Menus to Setup the Module

[3] Show Current Settings

This option shows the module's current settings. If the module is being configured for the first time, some of the fields will be blank.

The following example shows the dialog associated with this option.

```
Enter selection : 3
DECswitch900EF/MP
=====
DECswitch900EF/MP,MP Brouter:6 Enet 1 FDDI,HW=v1/2,#1489,SW=v1.0.000
SysUpTime                : 00:00:52  28 restarts
SNMP Read/Write Community : whitney95
Out-of-Band (OBM) Management RTS : Disabled
Default Gateway           : 16.126.16.254
-----
Interface   IP Address      Subnet Mask      Other Info
Ethernet    16.126.16.116   255.255.255.0
-----
=====
Press Return for Main Menu ...
```

Using Menus to Setup the Module

[4] IP Configuration

The IP Configuration option provides you with 5 selections.

The following example shows the dialog associated with this option.

```
Enter selection: 4
DECswitch900EF/MP
=====
                        IP CONFIGURATION
* * * * *
*   Configuration will not take effect until module is   *
*   restarted.                                           *
* * * * *
[1] Set SNMP Read/Write Community
[2] Set In-Band Interface IP Address
[3] Set Out-of-Band Interface IP Address
[4] Set Default Gateway
[5] Return to Main Menu
=====
Enter selection number : [n] <Return>
```

The following pages describe the IP Configuration options.

Topic	Page
Set SNMP Read/Write Community	4-9
Set In-Band Interface IP Address	4-10
Set Out-of-Band Interface IP Address	4-11
Set Default Gateway	4-12

[4] IP Configuration (Cont.)

[1] Set SNMP Read/Write Community

This option prompts you to enter the module's SNMP read/write community name.

The following example shows the dialog associated with this option.

```
Enter selection: 1
DECswitch900EF/MP
=====
                SET SNMP READ/WRITE COMMUNITY
Format: The format for a community name is a string,
        consisting of 4 to 31 printable ASCII characters,
        that describes the relationship between an SNMP
        agent and one or more SNMP managers. The string
        defines the authentication mechanism that is employed
        to validate the use of the community by the sending
        SNMP entity.
=====
Enter the community string [public]: whitney95 <Return>
                SNMP Read/Write community string set.
                Press Return for IP Configuration Menu ...
```

[4] IP Configuration (Cont.)

[2] Set In-Band Interface IP Address

This option prompts you to change or enter the IP address and subnet mask for the in-band interface. You can only configure one in-band interface at a time. The module does not need to be configured with a subnet mask for SNMP and Telnet communications with management stations located on the same subnet as the module.

The format for these values is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.).

The following example shows the dialog associated with this option.

```
Enter selection: 2
DECswitch900EF/MP
=====
                IN-BAND INTERFACE IP ADDRESS CONFIGURATION
Format: The standard 4 octet dotted decimal notation in which
        each octet of the address is represented as a decimal
        value, separated by a '.' character.
        example: 16.20.40.156
To delete the address, enter 0 in the appropriate address
        field.
-----
Interface      IP Address      Subnet Mask      Other Info
Ethernet
-----
=====
                Port Number (1-7) [ ]: 2
                IP address [ ]: 16.126.16.116 <Return>
                Subnet Mask [ ]: 255.255.255.0
                Press Return for IP Configuration Menu ...
```

[4] IP Configuration (Cont.)

[3] Set Out-of-Band Interface IP Address

This option prompts you to change or enter the IP address and subnet mask for the out-of-band interface.

This feature allows you to manage your module through the OBM port located on the DEChub ONE docking station as an alternative to normal in-band management. To enable out-of-band management, you need to assign an OBM IP address and select an OBM port speed from the DECswitch 900EF/MP INSTALLATION MENU.

The module does not need to be configured with a subnet mask for SNMP and Telnet communications with management stations located on the same subnet as the module.

The following example shows the dialog associated with this option.

```

                                Enter selection: 3
DECswitch900EF/MP
=====
                OUT-OF-BAND INTERFACE IP ADDRESS CONFIGURATION
Format: The standard 4 octet dotted decimal notation in which
        each octet of the address is represented as a decimal
        value, separated by a '.' character.
        example: 16.20.40.156
        To delete the address, enter 0 in the appropriate address
        field.
=====
Interface      IP Address      Subnet Mask      Other Info
=====
IP address [ ]: 16.126.16.114 <Return>
Subnet Mask [ ]: 255.255.0.0
Press Return for IP Configuration Menu ...
    
```

Using Menus to Setup the Module

[4] IP Configuration (Cont.)

[4] Set Default Gateway

This option sets the default gateway, if necessary, for the in-band interface. This is the address of a router that the module will use when communicating to a remote host. The default gateway address must be an address in the same subnet as your in-band address.

The following example shows the dialog associated with this option.

```
Enter selection : 4
DECswitch900EF/MP
=====
          SET IN-BAND INTERFACE DEFAULT GATEWAY ADDRESS
Format: The standard 4 octet dotted decimal notation in which
       each octet of the address is represented as a decimal
       value, separated by a '.' character.
       example: 16.20.40.156
To delete the address, enter 0 in the appropriate address
       field.
=====
Default Gateway [ ] : 16.126.16.254 <Return>
          Default Gateway Address Set.
          Press Return for IP Configuration Menu ...
```

[5] Out-of-Band Port Configuration

This option lets you set the out-of-band port speed and enable or disable Request To Send (RTS).

NOTE

The port speeds at both ends of the communications link must be identical.

The following example shows the dialog associated with this option.

```
Enter selection: 5
DECswitch900EF/MP
=====
OUT-OF-BAND PORT CONFIGURATION
* * * * *
* Configuration will not take effect until module is *
* restarted. *
* * * * *

[1] Set Port Speed
[2] Enable/Disable RTS
[3] Return to Main Menu
=====
Enter selection number : [n] <Return>
```

The following pages describe out-of-band configuration options.

Option	Page
Set Port Speed	4-14
Enable/Disable RTS	4-15

Using Menus to Setup the Module

[5] Out-of-Band Port Configuration (Cont.)

[1] Set Port Speed

This option lets you select the out-of-band port speed. The factory default for this option is 9600 baud. The OBM port speed that you select must match the speed of your OBM device.

The following example shows the dialog associated with this option.

```
Enter selection: 1
DECswitch900EF/MP
=====
                SET OUT-OF-BAND (OBM) PORT SPEED
                [1] 2400 baud
                [2] 9600 baud
                [3] 38400 baud
=====
Enter selection [2] (9600): [n] <Return>
                OBM port speed set
                Press Return for Main Menu ...
```

[5] Out-of-Band Port Configuration (Cont.)

[2] Enable/Disable RTS

This option allows you to enable or disable Request To Send (RTS). The factory default for this option is Disabled.

If the RTS is disabled, the following dialog appears on the screen.

```
Enter selection: 2
DECswitch900EF/MP
=====
                ENABLE/DISABLE OUT-OF-BAND PORT RTS

Enable/Disable Request To Send (RTS) allows additional
control to modem communications. When the RTS option
is Disabled the RTS signal on the OBM port is asserted
after self-test is completed and left asserted. When the
RTS option is Enabled the RTS signal is asserted only
when there is data to be transmitted and deasserted
after the data has been transmitted.
=====
RTS is Disabled. Would you like to ENABLE RTS? [N] <Return

Press Return for OBM Configuration Menu ...
```

If RTS is enabled, the screen shows:

```
RTS is Enabled. Would you like to Disable RTS?
```

Go to Local Console

You must configure the module before it is operational. There are two options that you can use to do this.

The first option runs a quick configuration interactive question and answer dialog. This (qconfig) method allows fast configuration of interfaces, basic bridging, and IP and IPX configuration.

The second option allows you to configure the module using commands to configure interfaces, bridging, and routing protocols (for example, IPX and IP).

Go to one of the subsections listed in the following table:

If you selected	Go to Page
[6] Go to Local Console (Qconfig)	4-16
[3] Go to Local Console (Commands)	4-18

[6] Go To Local Console (Qconfig)

This selection runs quick configuration. If you reset to factory default and go to local console without having configured the router via the installation menu, you will automatically enter **qconfig**.

You can exit quick configuration and accept the changes you made by typing: **quit**. The system displays the following messages:

```
Quick Config Done
Type RESTART at Config> prompt for the configuration to take effect.
Config (only)>
```


Go to Local Console

Then the DECswitch 900EF/MP INSTALLATION MENU displays.

```
DECswitch900EF/MP
=====
DECswitch 900EF/MP INSTALLATION MENU
* * * * *
*   To fully manage this router telnet to one of its IP   *
*   addresses or select item [3] below.                   *
* * * * *

[1] Restart with Factory Defaults
[2] Restart with Current Settings
[3] Go to Local Console

=====
Enter selection:  n <Return>
Press Return for Main Menu ...
```

If you need to review information about this menu, the following pages describe the menu options.

Option	Page
Restart with Factory Defaults	4-5
Restart with Current Settings	4-6
Go to Local Console	4-16

Go to Local Console

[3] Go To Local Console (Commands)

If you have configured the module then the following menu appears. Select [3] Go To Local Console to modify the configuration.

```
DECSwitch900EF/MP
=====
DECSwitch 900EF/MP INSTALLATION MENU
* * * * *
*   To fully manage this router telnet to one of its IP   *
*   addresses or select item [3] below.                   *
* * * * *
[1] Restart with Factory Defaults
[2] Restart with Current Settings
[3] Go to Local Console

=====
Enter selection:  3  <Return>
```

The system displays copyright statements and the following prompt:

```
MOS Operator Control
*
```

After the system prompt (*) appears, go to the section titled CONFIG Commands.

Go to Local Console

CONFIG Commands

This section describes commands that are unique to the DECswitch 900EF Router. Other CONFIG commands needed to configure the DECswitch 900EF Router can be found in the *Bridge Router Software System Software Guide*. You can use two methods to configure the module: Telnet (using commands) and OBM (via a menu). Commands listed in this manual include a command description, syntax requirements, and an example.

Note

You can configure the module at any time using Quick Configuration, by typing **qconfig** at the `Config>` prompt.

Step	Action						
1	At the system prompt (*), enter: talk 6						
2	Select one of the following options.						
	<hr/>						
	<table><thead><tr><th>Option</th><th>Page</th></tr></thead><tbody><tr><td>Configure Ethernet Port 3 Connection</td><td>4-20</td></tr><tr><td>Configure OBM</td><td>4-21</td></tr></tbody></table>	Option	Page	Configure Ethernet Port 3 Connection	4-20	Configure OBM	4-21
Option	Page						
Configure Ethernet Port 3 Connection	4-20						
Configure OBM	4-21						

Go to Local Console

Configuring Ethernet Port 3 Connection

This section describes how to configure the Ethernet Port 3 configuration for front (connector on the front of the Module) or back (connector on the DEChub ONE).

Step	Action
1	At the <code>Config></code> prompt enter: net 3
2	At the <code>ETH config></code> prompt enter either: connect front or connect back

To Exit and Restart

When you modify parameters, you must restart the router for the change to take effect. Enter the following three commands in the order shown.

Command	Type at the
exit	ETH Config prompt (<code>ETH Config></code>)
control/p	CONFIG prompt (<code>Config></code>)
restart	System prompt (*)

If you need to configure additional software, refer to the *Bridge Router Software System Software Guide*.

Go to Local Console

Configuring OBM

This section describes how to set the OBM IP address, speed, and enable RTS. After entering **talk 6**, at the `Config>` prompt you can set the following three OBM parameters as follows:

Parameter	Description	Default
set obm ip 16.40.156.20	Sets the out-of-band management port IP-address (for example, 16.40.156.20).	current IP-address
set obm speed 38400	Sets the OBM port speed (2400, 9600, or 38400 bps).	9600
set obm rts enable	Sets data transmission Request to Send (RTS) to Enable or Disable.	Disable

To Exit and Restart

When you modify parameters, you must restart the router for the change to take effect. Enter the following commands.

Command	Type at the
control/p	CONFIG prompt (<code>Config></code>)
restart	System prompt (*)

If you need to configure additional software, refer to the *Bridge Router Software System Software Guide*.

Chapter 5

Configuring the Module in a DEChub 900

Overview

Introduction

This chapter describes how to configure your DECswitch 900EF Router when it resides in a DEChub 900 MultiSwitch.

In this chapter

Topic	Page
Accessing the Setup Port	5-2
DEChub 900 MultiSwitch Installation Menu	5-3
Using Menus to Setup the Module	5-5

Accessing the Setup Port

Examples of the setup screen displays are provided in this section to aid in the description of the setup port and to display the options that are available. Because they are examples only, the displays can vary slightly from the actual screen displays on your setup port device. Boldface type in the screen display examples indicates user input.

DEChub 900 MultiSwitch Installation Menu

The following screen is an example of the DEChub 900 MultiSwitch INSTALLATION MENU.

To access the module's set up screen, you must choose option [9] Start Redirect Mode.

The following example shows the dialog associated with this option.

```
DEChub 900 MultiSwitch
=====
DEChub 900 MultiSwitch INSTALLATION MENU
[1] Reset with Factory Defaults
[2] Reset with Current Settings
[3] Show Current Settings
[4] Configure IP...
[5] Dump Error Log
[6] Downline Upgrade
[7] Configure Out-of-Band Port...
[8] Start Event Display Mode
[9] Start Redirect Mode...
=====
Enter selection number: 9 <Return>
```

[9] Start Redirect Mode

The **Start Redirect Mode** option redirects the DEChub 900 MultiSwitch Hub Manager set-up port to the set-up port of any network module (such as the DECswitch 900EF Router) that is installed into the DEChub 900 MultiSwitch. Choosing this option allows you to set-up or obtain the status of an installed network module by accessing the specified network module's installation menu.

After you choose the **Start Redirect Mode** option from the **DECswitch 900EF/MP INSTALLATION MENU**, the screen display prompts you for a slot number (8) as shown in the following example. After you enter the number of the slot in which the DECswitch 900EF Router is installed, the console is redirected to this slot.

Note

The slot number may change to reflect the slot number in which your module is installed.

The following example shows the dialog associated with this option.

```
Enter selection: 9
=====
Enter the slot number for redirection (1-8): 8 <Return>
Console redirected to 8:  DECswitch900EF/MP
Attempting connection [Ctrl/C to abort]...
```

If the redirection is successful after you press the Return key, the **DECswitch 900EF/MP INSTALLATION MENU** appears on your screen. Go to the next section, **Using Menus to Configure the Module**.

Using Menus to Setup the Module

This section describes the options that are available from the DECswitch 900EF/MP INSTALLATION MENU when the module is installed in the DEChub 900 MultiSwitch.

The following example shows the dialog associated with this option.

```

DECswitch900EF/MP - slot 8
=====
DECswitch 900EF/MP INSTALLATION MENU
  [1] Restart with Factory Defaults
  [2] Restart with Current Settings
  [3] Show Current Settings
  [4] IP Configuration

  [Ctrl/C] Return to the Hub Manager Menu
=====
Enter selection:  n <Return>
Press Return for Main Menu ...

```

The following table describes the installation menu options.

Topic	Page
Restart with Factory Defaults	5-7
Restart with Current Settings	5-8
Show Current Settings	5-9
IP Configuration	5-10

Note

The /MP that appears in menus will be replaced with /IP when using the Internet Protocol package.

Using Menus to Setup the Module

If the module was previously configured and restarted, the menu provides only two options, as shown in the following example.

```
DECSwitch900EF/MP - slot 8
=====
DECSwitch 900EF/MP INSTALLATION MENU
* * * * *
*   To fully manage this router telnet to one of its IP   *
*   addresses.                                           *
* * * * *
          [1] Restart with Factory Defaults
          [2] Restart with Current Settings

          [Ctrl/C] Return to the Hub Manager Menu
=====
Enter selection number:  n <Return>
```

[1] Restart with Factory Defaults

This option restarts the module, causing the module's configured nonvolatile configuration storage parameters to be initialized to factory default values. (To retain current values, use option [2] Restart with Current Settings.) Allow approximately one minute for the module to restart and complete self-test.

CAUTION

This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.

The following example shows the dialog associated with this option.

```
Enter selection : 1
DECswitch900EF/MP - slot 8
=====
                RESTART WITH FACTORY DEFAULTS
* * * * *
*           IMPORTANT!   IMPORTANT!   IMPORTANT!           *
* * * * *
* This selection will delete the current configuration      *
* settings and restart the system with the factory default*
* settings. All configuration settings will be lost.      *
* * * * *
=====
                Press Y to confirm [N]: <Return>
                Press Return for Main Menu ...
```

Using Menus to Setup the Module

[2] Restart with Current Settings

This option restarts the module but leaves the module's configured nonvolatile configuration storage parameters at their current values.

NOTE

Allow approximately 1 minute for the module to Restart.

The following example shows the dialog associated with this option.

```
Enter selection: 2
DECswitch900EF/MP - slot 8
=====
          RESTART WITH CURRENT SETTINGS
This selection will restart your system with the current
configuration settings.
=====
          Press Y to confirm [N] : <Return>
          Press Return for Main Menu ...
```

Using Menus to Setup the Module

[3] Show Current Settings

This option shows the module's current settings. If the module is being configured for the first time, some of the fields will be blank.

The following example shows the screen display associated with this option.

```
Enter selection : 3
DECswitch900EF/MP - slot 8
=====
DECswitch900EF/MP,MP Brouter:6 Enet 1 FDDI,HW=v1/2,#1489,SW=v1.0.000
SysUpTime                : 00:03:42   8 restarts
SNMP Read/Write Community : whitney95
Default Gateway           : 16.126.16.254
-----
Interface   IP Address      Subnet Mask      Other Info
Ethernet    16.126.16.116   255.255.255.0
Out-of-Band 16.126.16.114           Not Configured
-----
=====
Press Return for Main Menu ...
```

Using Menus to Setup the Module

[4] IP Configuration

The IP Configuration option provides you with 5 selections.

The following example shows the dialog associated with this option.

```
Enter selection: 4
DECswitch900EF/MP - slot 8
=====
                        IP CONFIGURATION
* * * * *
*      Configuration will not take effect until module is      *
*      restarted.                                             *
* * * * *

      [1] Set SNMP Read/Write Community
      [2] Set In-Band Interface IP Address
      [3] Set Out-of-Band Interface IP Address
      [4] Set Default Gateway
      [5] Return to Main Menu
=====
Enter selection number : [n] <Return>
```

The following pages describe IP Configuration options.

Option	Page
Set SNMP Read/Write Community	5-11
Set In-Band Interface IP Address	5-12
Set Out-of-Band Interface IP Address	5-13
Set Default Gateway	5-14

[4] IP Configuration (Cont.)

[1] Set SNMP Read/Write Community

This option prompts you to enter the module's read/write community name.

The following example shows the dialog associated with this option.

```
Enter selection: 1
DECswitch900EF/MP - slot 8
=====
                SET SNMP READ/WRITE COMMUNITY
Format: The format for a community name is a string,
        consisting of 4 to 31 printable ASCII characters,
        that describes the relationship between an SNMP
        agent and one or more SNMP managers. The string
        defines the authentication mechanism that is employed
        to validate the use of the community by the sending
        SNMP entity.
=====
Enter the community string [public]: whitney95 <Return>
                SNMP Read/Write community string set.
                Press Return for IP Configuration Menu ...
```

Using Menus to Setup the Module

[4] IP Configuration (Cont.)

[2] Set In-Band Interface IP Address

This option prompts you to change or enter the IP address and subnet mask for the in-band interface. The module does not need to be configured with a subnet mask for SNMP communications with management stations located on the same subnet as the module.

The format for these values is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.).

The following example shows the dialog associated with this option.

```
Enter selection: 2
DECswitch900EF/MP - slot 8
=====
                IN-BAND INTERFACE IP ADDRESS CONFIGURATION
Format: The standard 4 octet dotted decimal notation in which
       each octet of the address is represented as a decimal
       value, separated by a '.' character.
       example: 16.20.40.156
       To delete the address, enter 0 in the appropriate address
       field.
-----
Interface      IP Address      Subnet Mask      Other Info
Ethernet
-----
Port Number (1-7) [ ]: 2
IP address [ ]: 16.20.54.156 <Return>
Subnet Mask [ ]: 255.255.225.0
Press Return for IP Configuration Menu ...
```

[4] IP Configuration (Cont.)

[3] Set Out-of-Band Interface IP Address

This option prompts you to change or enter the IP address and subnet mask for the out-of-band interface. The module does not need to be configured with a subnet mask for SNMP communications with management stations located on the same subnet as the module.

The format for these values is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.).

The following example shows the dialog associated with this option.

```
Enter selection: 3

DECswitch900EF/MP - slot 8
=====
                OUT-OF-BAND INTERFACE IP ADDRESS CONFIGURATION
Format: The standard 4 octet dotted decimal notation in which
        each octet of the address is represented as a decimal
        value, separated by a '.' character.

                example: 16.20.80.40

        To delete the address, enter 0 in the appropriate address
        field.
-----
Interface      IP Address      Subnet Mask      Other Info
Ethernet       16.20.40.0      255.255.255.0
-----
=====
                IP address [ ]: 16.20.54.20 <Return>
                Subnet Mask [ ]: 255.255.156.0 <Return>
                Press Return for IP Configuration Menu ...
```

Using Menus to Setup the Module

[4] IP Configuration (Cont.)

[4] Set Default Gateway

This option sets the default gateway, if necessary. This is the address of a router that the module will use when communicating to a remote host. The default gateway address must be in the same subnet as your in-band address.

The following example shows the dialog associated with this option.

```
Enter selection : 4
DECswitch900EF/MP - slot 8
=====
          SET IN-BAND INTERFACE DEFAULT GATEWAY ADDRESS
Format: The standard 4 octet dotted decimal notation in which
        each octet of the address is represented as a decimal
        value, separated by a '.' character.
        example: 16.20.40.156
To delete the address, enter 0 in the appropriate address
        field.
=====
          Default Gateway [ ] : 16.156.126.88
          Default Gateway Address Set.
          Press Return for IP Configuration Menu ...
```

If you need to configure additional software, refer to the *Bridge Router Software System Software Guide*.

Chapter 6

Removing the Module

Overview

Introduction

This chapter describes how to remove the DECswitch 900EF Router from a DEChub 900 MultiSwitch. To remove the DECswitch 900EF Router from a standalone module, refer to the *DEChub ONE Installation* manual.

In this chapter

Topic	Page
Removing the Cables	6-2
Unseating the Module	6-4

Removing the Cables

To remove cables from the module, complete the steps in the following table that is appropriate for your type of cable (see Figure 6-1).

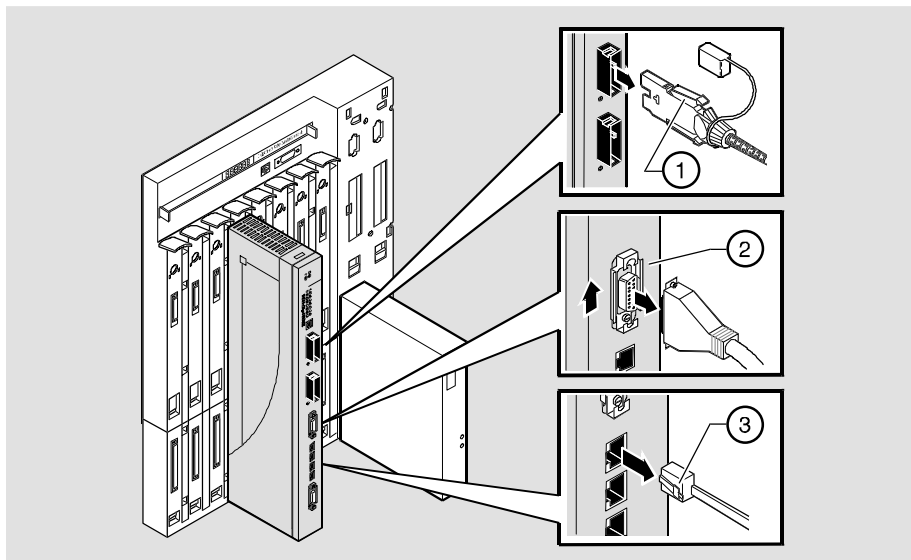
WARNING

Some fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume the cable is connected to a light source.

Step	Description
1.	FDDI cables, press the locking clips (1) on the cable plug, then pull out the cable.
2.	AUI cables, push the connector slide latch up (2) to the unlocked position, then pull out the cable.
3.	UTP/STP cables, press the release tab (3) on the cable plug, then pull out the cable.
4.	For Optical Bypass Relay (OBR) cables, refer to the removal instructions included with the OBR.

Removing the Cables

Figure 6-1 Cable Removal



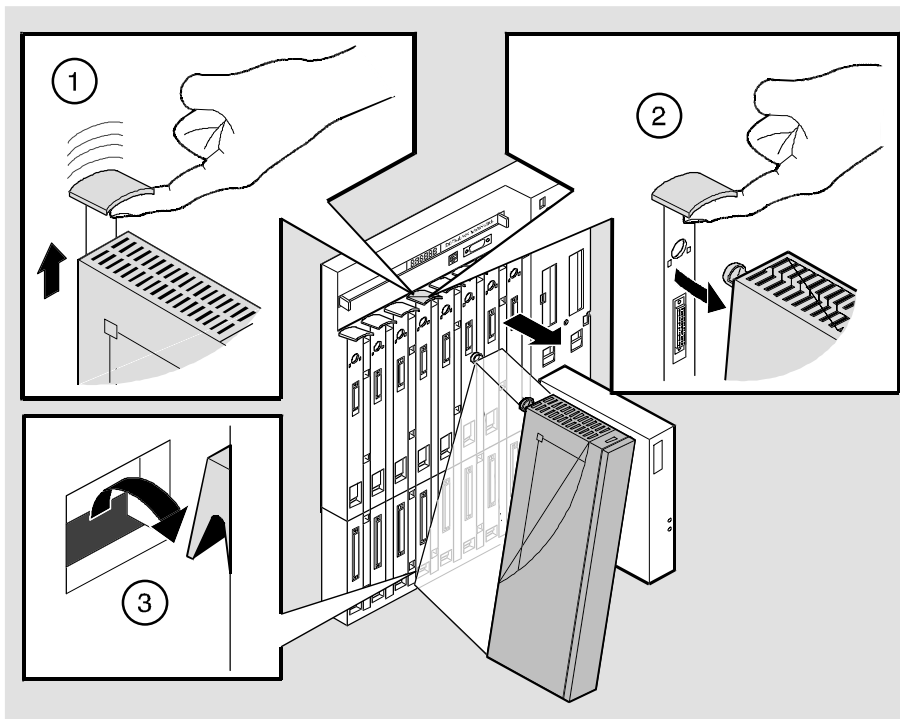
NPG-0109-95F

Unseating the Module

To unseat the module from the DEChub 900, complete the following steps (see Figure 6-2).

Step	Description
1.	Lift the release lever (1) located at the top of the DEChub 900 slot.
2.	While holding up the release lever (2), pivot the module back on its bottom mounting tab (3).
3.	Remove the module.

Figure 6-2 Unseat the Module



NPG-0008-95F

Appendix **A**

Problem Solving

Overview

Introduction

This appendix describes how to diagnose and solve problems with the module using the LED displays.

In this chapter

Topic	Page
LED Descriptions	A-2
Problem Solving Using LEDs	A-5

LED Descriptions

The module's LEDs provide dynamic indications of the status of the module. The LEDs can be in various states (on, off, or flashing), and can change color (green or yellow) depending on the operational status of the module or the level of activity on the network.

Normal Powerup





When the module power is initially turned on, the following events occur:

Event	Description
1	The module's Power LED lights as soon as power is applied to the unit.
2	The module initiates its built-in self-test. Flashing Port State LEDs and activity LEDs indicate that the module is running various subroutines as part of the self-test.
3	After the successful completion of self-test (within 60 seconds after power is applied), the Module OK LED lights, and remains lit.
4	The remaining LEDs (Port State and Network Activity LEDs, and PHY LEDs) now indicate their operational status, as described in the following table.

LED Descriptions

Table A-1 shows the states that are possible for each of the module's LEDs.

Table A-1. Module LED States

LED Name	Off	On (Green)	On (Yellow)	Flashing
Power 	No power to module.	Module receiving power.	N/A.	N/A.
Module OK 	Self-test failed (if more than 60 seconds elapsed).	Passed self-test	N/A.	Non-fatal failure.
Port State 	Failed maintenance test.	Port is enabled and running.	N/A.	Flashing green when management disables a port.
Network Activity 	No network activity.	Network traffic level through the front panel.	Network traffic level through the backplane or through the DEChub ONE docking station.	Intermittent network activity.

LED Descriptions

The FDDI Phy LEDs (see Table A-2) indicate the status of the connection between the module and the FDDI network.

Table A-2 FDDI PHY LED States

LED Name	Off	On		Flashing		
	No Color	Green	Yellow	Green	Yellow	Green / Yellow
PHY	Ready to connect	Good connection	Link Error Rate exceeded	Disabled or broken	Illegal or unwanted connection	Standby /Dual homing

Problem Solving Using LEDs

When diagnosing a problem with the module, note that the problem is often indicated by the combined states of the module LEDs. Table A-3 lists the typical combined states of the LEDs for various error conditions that can occur during initial installation of the device, along with probable causes and corrective actions to take.

Table A-3 Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
Power LED is off.	The module is not receiving +5Vdc.	<p>Check the power status on the Hub Manager status display.</p> <p>If the Hub Manager status display indicates that power is available for this module, press the release lever and reseal or remove the module.</p> <p>Inspect the module's 48- or 160-pin connector for bent, broken, or dirty pins.</p> <p>If the problem persists, either replace the module or contact your service representative to correct the problem.</p>

Problem Solving Using LEDs

Symptom	Probable Cause	Corrective Action
Module OK LED is off.	Self-test in progress.	Wait for self-test to complete.
	Self-test failed.	If the LED does not light within 60 seconds, lift the release lever momentarily to repeat the self-test. If self-test fails again, replace the module. If the problem persists, contact your service representative to correct the problem.
Module OK LED is off and Port State LED for Port 1 is blinking green (once every 8 seconds).	Module's firmware image is corrupted.	Either replace the module or contact your service representative to correct the problem.
Module OK LED is flashing, but module continues to operate normally.	A nonfatal error occurred.	Power off and on. If the problem persists, either replace the module or contact your service representative to correct the problem.

Problem Solving Using LEDs

Symptom	Probable Cause	Corrective Action
Port State LED is off.	1. Connection is bad (loose, or incorrect cable). 2. Port not connected.	Correct the cable connection. None -- normal operation.
Port State LED is on yellow.	Port failure.	Either replace the module or contact your service representative to correct the problem.
Port State LED is flashing green.	The corresponding port is in one of the following port states: Backup, Preforwarding or Disabled.	None -- normal operation.

Appendix **B**

Connector and Pin Assignments

Overview

Introduction

This appendix shows the pin assignments of the connectors, cables, and adapters that are part of, or can be used with, the module.

In this chapter

Topic	Page
Connector Assignments	B-2
Internal and External Crossover Configurations	B-6

Connector Assignments

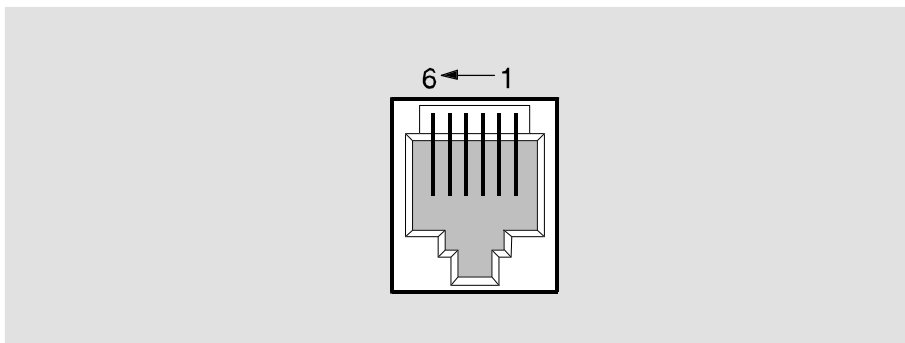
Optical Bypass Relay (6-pin MJ) Connector

The Optical Bypass Relay (OBR) feature on the module maintains FDDI dual-ring integrity if the module fails or if the power to the module is turned off. The following illustration shows the OBR 6-pin Modular Jack (Shielded RJ12) connector and its pin assignments. Refer to this information when selecting OBR devices.

Table B-1. Optical Bypass Relay Connector Pin Assignments

Pin	Assignment
1,2	Relay drive; +5V @ 200 mA (max.)
3,4,6	Return; grounded internally
5	Bypass present; must be externally grounded to pin 3,4, or 6

Figure B-1 Optical Bypass Relay Connector



NPG-8720-95F

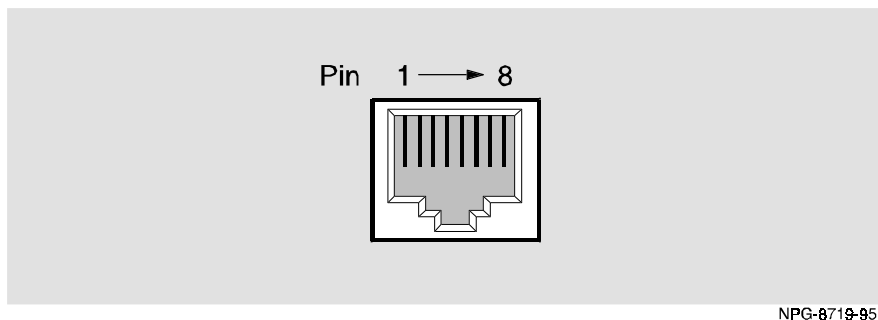
10BaseT (8-pin MJ) Port Connector

This section shows the 8-pin MJ (straight-through) connector and its pin assignments.

Table B-2 10BaseT Port Connector Pin Assignments

Pin	Assignment
1	TX+
2	TX-
3	RX+
4	Unused
5	Unused
6	RX-
7	Unused
8	Unused

Figure B-2 10BaseT Port Connector



NOTE

All 10BaseT port connectors on the module are straight-through connections.

Connector Assignments

AUI (15-pin D-Sub) Port Connector

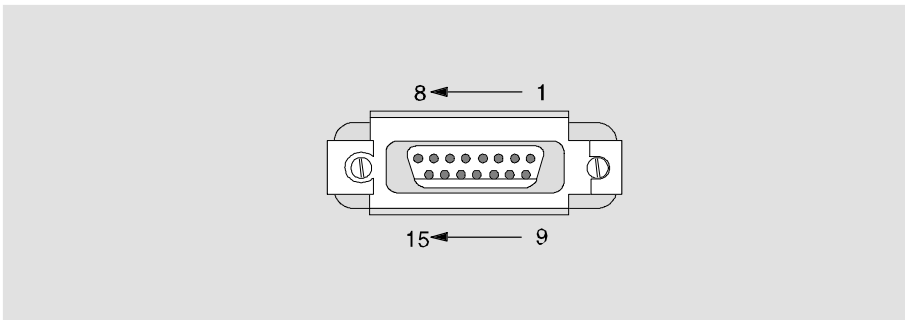
This section shows the 15-pin AUI connector and its pin assignments.

Table B-3 AUI Port Connector Pin Assignments

Pin	Ports
1	Ground
2	CI+
3	DO+
4	Ground
5	DI+
6	Power rtn
7	NC
8	Ground
9	CI-
10	DO-
11	Ground
12	DI-
13	Power 12V
14	Ground
15	NC

Connector Assignments

Figure B-3 AUI Port Connector



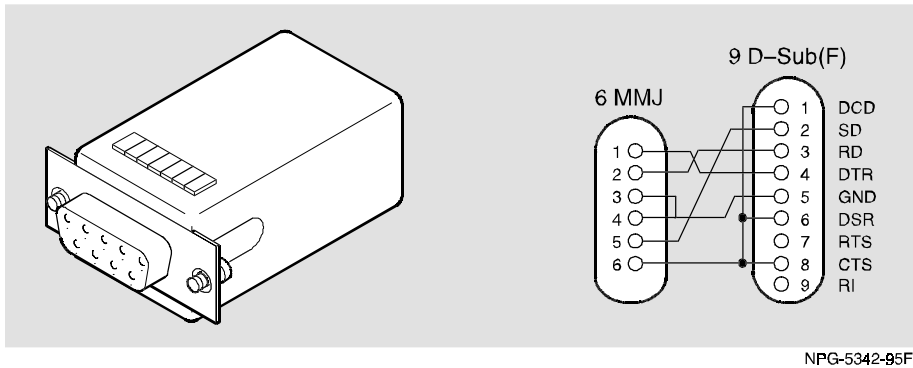
NPG-0222-95F

Connector Assignments

H8571-J Adapter

This section shows the H8571-J adapter (6-pin MMJ to 9-pin D-Sub connector) and its pin assignments.

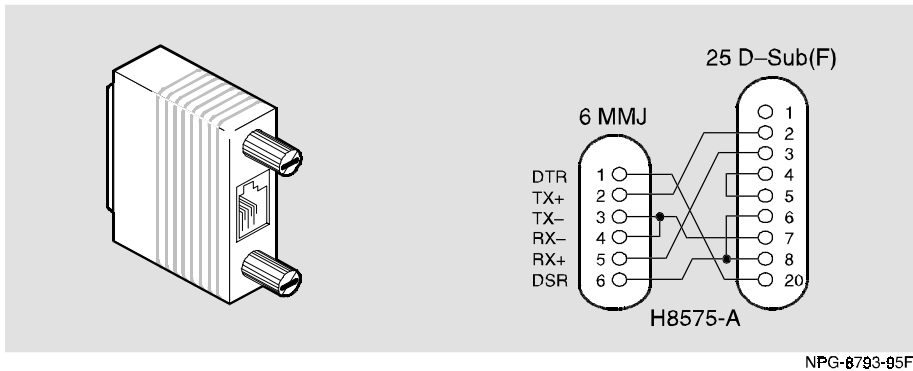
Figure B-4 H8571-J Adapter



H8575-A Adapter

This section shows the H8575-A adapter (6-pin MMJ connector to 25-pin D-Sub connector) and its pin assignments.

Figure B-5 H8575-A Adapter



NOTE

EOS/ESD protection devices are not shown in the illustration.

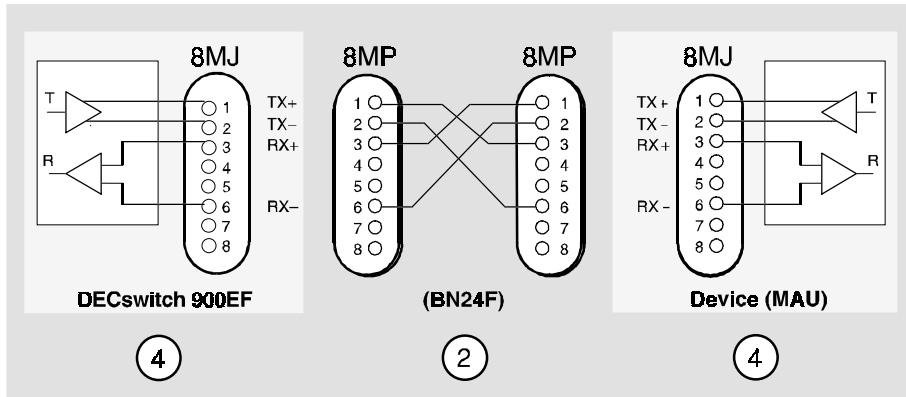
Internal and External Crossover Configurations

A crossover function must be implemented in every twisted-pair link. The crossover function (internal or external) allows the transmitter of one device to connect to the receiver of the device at the other end of the twisted-pair link.

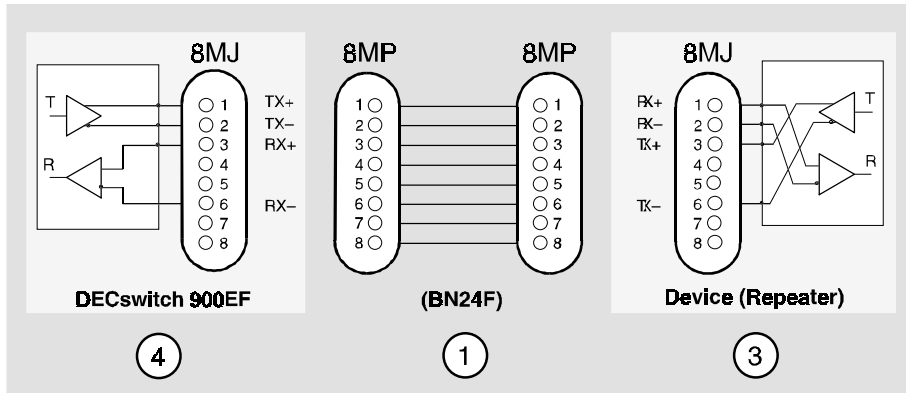
The following illustration shows straight-through (1) and crossover cables (2) for connecting crossover (3) and straight-through (4) types of devices. The DECswitch 900EF Router uses straight-through connectors.

Figure B-6 Crossover Configurations

External Crossover Configuration:



Internal Crossover Configuration:



NPG-0104-95F

¹ If screened cabling is required, use BN26M.

Appendix **C**

Product Specifications

Overview

Introduction

This appendix lists the operating specifications and the acoustical specifications for the DECswitch 900EF Router.

In this chapter

Topic	Page
Operating Specifications	C-2
Acoustical Specifications	C-4

Operating Specifications

This section shows the operating specifications.

Table C-1 Operation Environment and Connector Specifications

Parameter	Specifications
<u>Operating Environment:</u>	
Operating Temperature ¹	5°C to 50°C (41°F to 122°F)
Relative Humidity	10% to 95% noncondensing
Altitude	Sea level to 4900 m (16,000 ft)
Power	67.5 W, total power 9.0 A, 5Vdc, 0.1 A, 12Vdc ² 1.5 A, 15Vdc

Connectors:

DECswitch 900EF has: one Dual Attachment Station (DAS) FDDI port multimode optics (ANSI MIC), one shielded 6-pin MJ (OBR), two 15-pin D-Sub (AUI ports), and four shielded 8-pin MJ (10BaseT ports) with straight through connectors.

DEChub ONE has: one 8-pin MJ (setup port), one DB-9 (OBM), and one 15-pin D-Sub (AUI connector).

¹ For sites above 4900 m (16,000 ft), decrease the operating temperature specification by 1.85C for each 1000 m or 3.25F for each 3200 ft.

² The 12Vdc power in the DEChub 900 is derived from the 15Vdc power source. Although it is listed separately in the product specifications, the 12Vdc requirements are included in the 15Vdc power total.

Table C-2 Physical Specifications and Certification

Parameter	Specifications
<u>Physical:</u>	
Height	4.45 cm (1.75 in)
Width	15.25 cm (6 in); 25.40 cm (10.0 in) with a DEChub ONE docking station.
Depth	15.25 cm (6 in); 25.40 cm.
Weight	1.8 kg (4 lb) ³
<u>Certification:</u>	
CE, CSA, FCC,T-V, UL, VCCI	

³ Include an additional 1.59 kg (3.5 lb) when attached to a DEChub ONE docking station.

Acoustical Specifications

This section shows the acoustical specifications.

Acoustics - Declared values per ISO 9296 and ISO 7779¹

Table C-3 Acoustical Specifications

Product	Sound Power Level L_{WA}d, B	Sound Pressure Level L_pAm, dBA (bystander positions)
	<u>Idle/Operate:</u>	<u>Idle/Operate:</u>
DECswitch 900EF Router DEFBA-MA	5.0	36
DECswitch 900EF & DEChub ONE DEFBA-MA + DEHUA	5.4	40

¹ Current values for specific configurations are available from Digital Equipment representatives. 1 B = 10 dBA.

Acoustical Specifications

Schallemissionswerte - Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779²

Table C-4 Aktuelle Werte für spezielle Produkt

Produkt	Schalleistungspegel L_{WA}d, B	Schalldruckpegel L_{pAm} dBA (Zuschauerpositionen)
	<u>Leerlauf/Betrieb:</u>	<u>Leerlauf/Betrieb:</u>
DECswitch 900EF Router DEFBA-MA	5,0	36
DECswitch 900EF & DEChub ONE DEFBA-MA + DEHUA	5,4	40

² Aktuelle Werte für spezielle Ausrüstungsstufen sind über die Digital Equipment Vertretungen näherh-Itlich. 1 B = 10 dBA.

Acoustical Specifications